DOCUMENT RESUME

ED 242 498 SE 041 786

TITLE The Mathematics Examinations of the College Board, 1981-83.
INSTITUTION College Entrance Examination Board, New York, N.Y.; Educational Testing Service, Princeton, N.J.
PUB DATE 80
NOTE 12p.
PUB TYPE Guides - Non-Classroom Use (055) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Tests; *College Entrance Examinations; Higher Education; *Mathematics Achievement; Mathematics Education; *Standardized Tests
IDENTIFIERS *College Board Achievement Tests; PF Project

ABSTRACT

An overview of the 18 mathematics examinations offered by the College Board is provided. In addition to summaries of the purpose and content of each of the tests, the general purposes of the examination system, faculty involvement in test preparation, and the use of hand-held calculators during testing are discussed. Tables review the tests, the coverage of math skills and content areas, cognitive levels, and statistical data. A glossary and list of the members of the 1980-81 advisory committee are included. (LP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED242498

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

✓ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Bonnie Strassberg

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

THE MATHEMATICS EXAMINATIONS OF THE COLLEGE BOARD, 1981-83

College Entrance Examination Board
New York, N.Y.

SE 041 786

The Mathematics Examinations of the College Board 1981-83

The College Board offers 18 mathematics examinations (see Table 1 on page 2) within the framework of 6 programs:

- Preliminary Scholastic Aptitude Test/National Merit Scholarship Qualifying Test (PSAT/NMSQT)
- Admissions Testing Program (ATP)
- Advanced Placement (AP) Program
- College-Level Examination Program (CLEP)
- Comparative Guidance and Placement (CGP) Program
- Descriptive Tests of Mathematics Skills (DTMS)

All the tests, with the exception of the PSAT/NMSQT, help postsecondary institutions respond to the diverse backgrounds of entering students. The tests can be used to assess learning that has already occurred and to predict subsequent learning. Students can then be placed in appropriate courses or can receive recognition in terms of credit for a level of mastery equivalent to that normally gained through college courses. The PSAT/NMSQT serves as a practice test for the Scholastic Aptitude Test (SAT) and as a qualifying test for scholarship programs administered by the National Merit Scholarship Corporation. Most of these examinations are available for local administration at colleges through Multiple Assessment Programs and Services (MAPS) of the College Board.

MAPS offers, for a fee, an optional central scoring and reporting service for all tests in the program. Institutions may also hand score or machine score the tests locally. Self-scoring answer sheets are available for the CGP and DTMS. With central scoring, paper score reports, magnetic tape reports, and score distributions are routinely provided. Student rosters are available on special order.

This publication provides comparative descriptions of the examinations to assist faculty members, academic administrators, and testing personnel in the selection of the particular tests that will best meet their requirements. It should also enable high school teachers of mathematics to guide their students to a particular examination in terms of their preparation and needs, as well as their prospective college's policies. The college or university determines not only which examinations to use, but also the level of performance that an individual must demonstrate for admission, placement, or credit. The pamphlet *Guidelines on the Uses of College Board Test Scores and Related Data* provides specific advice.* Also, the College Board, through its regional offices, helps institutions develop policies and procedures suited to their needs.

Faculty Involvement

The SAT and the PSAT/NMSQT are developed with the assistance of a 10-member SAT Committee made up of college and high school faculty, counselors, and administrators. All other examinations are developed by committees of both college and secondary school faculty actively teaching appropriate mathematics courses. A selected group of college mathematics teachers and secondary school AP teachers grade the free-response questions of the AP Examinations in a central location. Faculty involvement provides a critical tie to the changing practices, curriculums, and standards of American mathematics education. The Mathematics Advisory Committee reviews test offerings in mathematics for college selection, placement, credit, and exemption and advises the College Board on the appropriateness of its examinations to the curriculums and course patterns commonly found in secondary schools, colleges, and universities.

Use of Hand-Held Calculators

The College Board Mathematics Advisory Committee supports the appropriate use of hand-held calculators in mathematics instruction. Students preparing for college mathematics should be encouraged to purchase scientific calculators and to use them in their school mathematics courses. The use of calculators on examinations, however, is a complicated issue involving fairness to students who have had unequal access to calculators.

Beginning in *January 1983*, the use of calculators will be permitted, but not required, on AP and CLEP calculus examinations. Calculators will not be permitted on the other College Board mathematics examinations.

The policy regarding use of calculators on examinations will be continually reviewed as calculators be-

*The order form on page 11 gives further information about *Guidelines* and other publications related to the mathematics examinations of the College Board.

This booklet was prepared and produced for the College Board by Educational Testing Service.

The College Board and ETS are dedicated to the principle of equal opportunity, and their programs, services, and employment policies are guided by that principle.

Copyright © 1980 by College Entrance Examination Board. All rights reserved.

Permission is hereby granted to any nonprofit organization or institution to reproduce this booklet in limited quantities for its own use, but not for sale, provided that the copyright notice of the College Entrance Examination Board appears in all reproduced copies.

TABLE 1

THE MATHEMATICS EXAMINATIONS OF THE COLLEGE BOARD

	Coverage	Format	Administration (When and Where Given)
PSAT/NMSQT (Mathematics Section)	Shortened, somewhat easier version of the SAT	50 minutes: 50 multiple-choice questions	Annually in October at participating schools
ATP SAT (Mathematics Sections)*	Arithmetic, algebra, geometry	60 minutes: 60 multiple-choice questions	Seven times a year at ATP Test Centers
ATP Achievement Tests in Mathematics*			
Level I	Three years of college preparatory mathematics	60 minutes: 50 multiple-choice questions	Five times a year at ATP Test Centers
Level II	More than 3 years of college preparatory mathematics with emphasis on precalculus topics	60 minutes: 50 multiple-choice questions	
AP Examinations in Mathematics*			
Calculus AB	One-year college course in calculus with elementary functions	3 hours: 90-minute multiple-choice section—45 questions 90-minute free-response section—7 questions	Annually in May at AP participating secondary schools
Calculus BC	One semester beyond Calculus AB	3 hours: 90-minute multiple-choice section—45 questions 90-minute free-response section—7 questions	
CLEP General Examination in Mathematics			
Part A	Basic skills and concepts in arithmetic, algebra, data interpretation, and geometry	30 minutes: 40 multiple-choice questions	At CLEP Test Centers (See *CLEP Registration Guide* for schedule.)
Part B	Sets, logic, the real number system, functions and their graphs, probability and statistics, and other topics	60 minutes: 50 multiple-choice questions	
CLEP Subject Examinations in			
College Algebra	One-semester college algebra course	90 minutes: 80 multiple-choice questions	At CLEP Test Centers (See *CLEP Registration Guide* for schedule.)
Trigonometry	One-semester college trigonometry course	90 minutes: 80 multiple-choice questions	
College Algebra-Trigonometry	One-semester college algebra and trigonometry course	90 minutes: 80 multiple-choice questions (40 each on college algebra and trigonometry)	
Calculus with Elementary Functions	One-year college course in calculus with elementary functions	3 hours: 90-minute multiple-choice section—45 questions 90-minute optional free-response section—6 questions	
CGP Mathematics Tests			
Test C	Computation and applied arithmetic	40 minutes: 60 multiple-choice questions	Through MAPS participating colleges at their discretion
Test D	Computation and elementary algebra	40 minutes: 70 multiple-choice questions	
Test E	Elementary and intermediate algebra	40 minutes: 70 multiple-choice questions	
DTMS			
Arithmetic Skills	Computation and applied arithmetic	30 minutes: 35 multiple-choice questions	Through MAPS participating colleges at their discretion
Elementary Algebra Skills	Elementary algebra	30 minutes: 35 multiple-choice questions	
Intermediate Algebra Skills	Intermediate algebra	30 minutes: 30 multiple-choice questions	
Functions and Graphs	Elementary functions	30 minutes: 30 multiple-choice questions	

*Forms of these tests are available locally to colleges and universities through MAPS.

come more commonly used in mathematics classrooms. Other College Board mathematics examinations may be modified in the future to take advantage of calculator skills. Any such changes will be announced well in advance of their implementation.

The Examinations

Preliminary Scholastic Aptitude Test/National Merit Scholarship Qualifying Test—Mathematics Section

The PSAT/NMSQT is a shortened and somewhat easier version of the Scholastic Aptitude Test, which is described below, and is intended primarily for guidance and counseling. Test results are used by the National Merit Scholarship Corporation in identifying candidates for possible scholarship awards. Scores are reported on a 20 to 80 scale comparable to the 200 to 800 SAT scale, and the content level of preparation expected of students is the same as for the SAT. Most students take the examination in the fall of their junior year.

ATP Scholastic Aptitude Test—Mathematics

The primary purpose of the SAT is to provide colleges with a standard measure of developed abilities that will assist them in making decisions on student admissions. Additionally, the test results, in conjunction with the student's transcript of courses and grades, may help in making placement decisions.

The content prerequisites for the mathematics sections include arithmetic, first-year algebra, and some geometry. Although most of the geometric ideas involved are usually taught in the elementary and junior high years, a few of the questions involve topics that are not taught until high school geometry. Some of the questions are routine and similar to standard textbook problems, but many of them require nonroutine approaches rather than the straightforward application of a rule. Because problem-solving skills are further developed by exposure to additional mathematics courses such as intermediate algebra, students with this type of preparation tend to be more at ease when taking the mathematics sections of the SAT.

Scores are reported on a 200 to 800 scale. All forms are statistically equated to previous forms, and percentile ranks are reported each year based on scores earned by the graduating class of a prior year.

ATP Achievement Tests in Mathematics—Level I and Level II

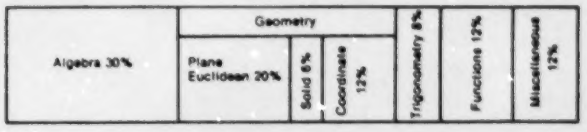
The primary purpose of the Achievement Tests is to provide a measure of achievement in high school mathematics. Colleges may use test scores in conjunction with high school grades and courses in making admissions and placement decisions.

The Level I test is a broad survey test with content typical of three years of college preparatory mathematics. The Level II test is intended for students who have taken college preparatory mathematics for more than three years, although it is suitable for able students who have had three years of some enriched or accelerated mathematics curriculums. The Level II test is somewhat narrower in scope than the Level I. Although the Level II test samples all college preparatory mathematics, the emphasis is on advanced precalculus topics such as elementary functions. Scores for Level I and Level II are reported on a 200 to 800 scale and all forms of each test are statistically equated to previous forms.

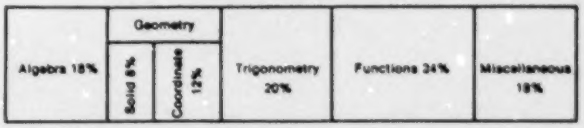
At the precalculus level, the Level I score could be used for sectioning mathematics classes; however, it should be used for determining placement only if it is considered in conjunction with the student's transcript of courses and grades. Students with an appropriate score on the Level II test may be placed in a beginning calculus course or given credit for precalculus courses which are part of a general education requirement. Table 2 shows approximately how the questions in the two tests are distributed over the major content areas.

TABLE 2
DISTRIBUTION OF QUESTIONS OVER MAJOR CONTENT AREAS

Level I



Level II



AP Calculus AB and Calculus BC

The examinations, based on published course descriptions, are designed for use in awarding credit or placement or both in a college calculus sequence. Calculus AB covers topics usually included in a one-year course in calculus with elementary functions, with well over half the year being devoted to the calculus. Calculus BC covers additional topics, such as infinite series and sequences and an introduction to differential equations normally included in a calculus course extending approximately one semester beyond that of Calculus AB.

Grades for the two examinations are reported on a five-point (1-5) scale: 5—extremely well qualified, 4—well qualified, 3—qualified, 2—possibly qualified, and 1—no recommendation. Students are graded with respect to the course description rather than by comparison to other students, and every effort is made to keep the standards consistent from year to year. Each examination contains a multiple-choice section and a free-response section. The two sections are weighted

equally in deriving the reported grade. The final decision as to whether or not to grant credit rests with the college. Most colleges grant credit and/or appropriate placement to students who receive grades of 3, 4, or 5; however, some colleges give students receiving grades of 2 favorable consideration, particularly in terms of placement.

Future AP Courses and Examinations

In 1980 the College Board appointed a National Task Force to prepare position statements concerning possible new Advanced Placement courses and examinations in mathematics and mathematics-related areas. The Task Force prepared statements on courses in Computer Science, Statistics, and Linear Algebra for consideration by the Mathematics Advisory Committee. On the basis of these statements and other information, including the results of two surveys, the Advisory Committee recommended that the College Board introduce an AP program in Computer Science as soon as feasible. The College Board is currently giving this recommendation serious consideration. If a decision is made to offer an AP Examination in Computer Science, a course description will be made available to secondary schools and colleges at least 18 months prior to the administration of the first examination.

CLEP General Examination in Mathematics

The General Examination in Mathematics may be used by colleges to award credit for or to exempt students from a general education requirement in mathematics. The questions in Part A deal with basic skills and concepts in arithmetic, elementary algebra, data interpretation, and geometry. The questions in Part B test the body of mathematical knowledge that is usually taught in a college-level mathematics course designed to meet a general education or core requirement. Content areas covered in Part B include sets, elementary logic, the real number system, functions and their graphs, and elementary probability and statistics. Three scores are reported: a score for Part A and a score for Part B, each on a 20 to 80 scale, and a total score on a 200 to 800 scale. In determining the total score, the Part B subscore is weighted twice the Part A subscore, since Part B questions are generally more demanding and more time is allowed to answer them.

Credit awarded through the General Examination in Mathematics should be determined so that individuals granted credit will have demonstrated a level of mathematical maturity comparable to that of students who have successfully completed the institution's related course offering. Score interpretation data are available to assist in this process.

The General Examination in Mathematics can be used in the following ways:

1. Granting college credit for particular courses in general mathematics for nonscience majors
2. Granting credit or exemption for a course with comparable objectives which is part of the sequence of courses for elementary education majors (The test does not cover teaching methods and other specialized mathematical topics that could be in the sequence.)
3. Meeting general mathematics area requirements as specified by some colleges

Because the coverage of algebra is limited and no trigonometry is tested, the test results should *not* be used to award credit for college algebra, trigonometry, or other calculus preparatory mathematics courses. The CLEP Subject Examinations in College Algebra and Trigonometry described below are designed to meet these needs.

CLEP Subject Examination in College Algebra

The examination measures knowledge usually acquired in a one-semester college algebra course and is normed on undergraduate students completing such a course. Scores are reported on a 20 to 80 scale and may be used to grant credit for a college algebra course and for placement into the next course in a sequence of mathematics courses.

CLEP Subject Examination in Trigonometry

The examination measures knowledge normally acquired in a one-semester trigonometry course offered at the college level and was normed on undergraduate students completing such a course. Scores are reported on a 20 to 80 scale and may be used to grant credit for a trigonometry course at the college level and for placement into the next course in a sequence of mathematics courses.

CLEP Subject Examination in College Algebra-Trigonometry

The examination measures knowledge and ability in algebra and trigonometry of a student with training approximately equivalent to that obtained by taking a one-semester course combining college algebra with trigonometry. Three scores are reported on a 20 to 80 scale: total score and a subscore for algebra and one for trigonometry. The examination consists of one section from the Subject Examination in College Algebra and one section from the Subject Examination in Trigonometry. Scores may be used to grant credit for either a one-semester course covering both college algebra and trigonometry or two one-semester courses covering each of these areas separately. Scores may also be used for placement into the next course in a sequence of mathematics courses.

CLEP Subject Examination in Calculus with Elementary Functions

The examination measures knowledge usually acquired in a one-year college course in calculus with elementary functions. Approximately 80 percent of the examination tests topics from differential and integral

calculus, with the remaining 20 percent devoted to questions covering topics from elementary functions. Scores are reported on a 20 to 80 scale, and forms of this examination have been normed on a group of undergraduate students completing an appropriate course. Scores may be used for awarding credit or placement. An optional free-response section is also available. This optional section is sent for grading to the institution designated by the student.

CGP Mathematics Tests

The CGP mathematics tests are designed primarily to help institutions place students with modest mathematical preparation. Depending on their backgrounds, the students take one of three tests, C, D, or E. Each test consists of two parts as shown in Table 3.

TABLE 3
CGP MATHEMATICS TESTS

Test	Part 1	Part 2
C	35 Computation Questions	25 Applied Arithmetic Questions
D	35 Computation Questions	35 Elementary Algebra Questions
E	35 Elementary Algebra Questions	35 Intermediate Algebra Questions

The same computation test is used in Tests C and D, and the same elementary algebra test is used in Tests D and E. Test C is usually taken by students who have had no formal course in high school algebra, Test D by students who have had only one year of high school algebra, and Test E by students who have had more than one year of high school algebra. Scores are reported on a 20 to 80 scale; a total score and a score for each part are reported for each student. The percentile rank of the total score based on students entering two-year institutions is also reported.

Each part is 20 minutes long and can be administered separately with self-scoring answer sheets so that both students and institutions can obtain on-the-spot results. Normative data are available for each part. The self-scoring feature is particularly useful to institutions with open-door policies. Cluster data are provided for each of the separate tests. Each question for each test is classified by major topic and level of difficulty.

Descriptive Tests of Mathematics Skills

The primary purpose of the Descriptive Tests of Mathematics Skills (DTMS) is to assist four-year and two-year colleges in assessing students' skills in particular areas of mathematics. This assessment aids the colleges in assigning students to appropriate entry-level courses, counseling students into upper-level courses for which they are qualified, and planning instruction for students needing to improve their skills in a particular area of mathematics. The tests may be used in a variety of situations ranging from large-scale screening and placement to identification of an individual's learning needs.

The four DTMS, which may be used separately or in any combination, are Arithmetic Skills, Elementary Algebra Skills, Intermediate Algebra Skills, and Functions and Graphs. Within each test, individual questions can be identified with clusters which are designed to give descriptive information about a student's strengths and weaknesses in specific skill areas. (See Table 4.)

TABLE 4
DESCRIPTIVE TESTS OF MATHEMATICS SKILLS

Test	Clusters	Number of Questions in Cluster
Arithmetic Skills	Operations with Whole Numbers	9
	Operations with Fractions	10
	Operations with Decimals and Percent	10
	Applications Involving Computation	6
Elementary Algebra Skills	Operations with Real Numbers	9
	Operations with Algebraic Expressions	17
	Solutions of Equations, Inequalities, and Word Problems	9
Intermediate Algebra Skills	Algebraic Operations	10
	Solutions of Equations and Inequalities	10
	Coordinate Plane and Graphs	10
Functions and Graphs	Algebraic Functions	8
	Exponential and Logarithmic Functions	9
	Trigonometric Functions	13

Each of the DTMS is 30 minutes long and can be administered with a self-scoring answer sheet so that students and institutions can obtain on-the-spot results. Scaled scores are also provided for each test so that scores on different forms of the same test can be expressed in comparable terms. Scaled scores may not be compared across tests because the four tests vary

considerably in content and difficulty.* Cluster data are provided for each of the separate tests. Each question for each test is classified by major topic.

Levels of Thinking Measured and Content Specifications

The levels of thinking are defined as follows:

Knowledge includes recalling factual knowledge, performing mathematical manipulations, and solving routine problems.

Comprehension includes understanding and applying concepts.

Higher Mental Processes include solution of nonroutine problems, logical reasoning, and generalization.

Table 5 illustrates for some of the examinations the percentage of questions by level of thinking. Table 6 illustrates for each of the examinations the approximate percentage of questions in each broad content area.

TABLE 5
PERCENTAGE OF QUESTIONS BY LEVEL OF THINKING

	Knowledge	Comprehension	Higher Mental Processes
ATP SAT (Mathematics Sections)	20	50	30
ATP Achievement Tests in Mathematics			
Level I	10	70	20
Level II	5	65	30
AP Examinations in Mathematics			
Calculus AB (Section I)	40	40	20
Calculus BC (Section I)	30	40	30
CLEP Subject Examination in Calculus with Elementary Functions	40	40	20

Differences among Examinations

Although the content of a number of the examinations is similar and a question in one might fit equally well in another, no two examinations are completely comparable in terms of content, difficulty, or potential use. Following is a discussion of the differences between those examinations which overlap.

*A College Board Research and Development Report entitled *Validation of the Descriptive Tests of Mathematics Skills* (RDR 79-80, No. 2, Research Report RDR-80-6, June 1980) is available upon request from Research Publications Unit, Educational Testing Service, Princeton, NJ 08541.

ATP Achievement Tests in Mathematics — Level I and Level II

The Level II test is narrower in scope and stresses those aspects of mathematics that are prerequisite for a course in calculus. A significant percentage of Level I is devoted to plane Euclidean geometry, a topic that is not tested directly by Level II. A greater percentage of Level II is devoted to trigonometry, elementary functions, and advanced precalculus topics.

AP Calculus AB and CLEP Calculus with Elementary Functions

On the recommendation of the Mathematics Advisory Committee, the CLEP Calculus with Analytic Geometry Examination was replaced by an examination in Calculus with Elementary Functions which includes the same topics as does the AP Calculus AB Examination. Since January 1978, the multiple-choice portion of the CLEP examination has been similar to the AP Calculus AB (Section I) Examination. Both the CLEP and AP Examinations include a free-response section; however, in the former it is optional and must be graded locally, whereas in the latter it is mandatory and centrally graded. Although the free-response sections cover the same content, they are never identical in the two programs.

A College Board study compared the performance of college students who had completed a calculus course with the performance of Advanced Placement Calculus students. Both groups took the multiple-choice section of a Calculus AB examination. The Advanced Placement students performed at a higher level than the group of students who were in the college calculus norming sample. In terms of scores reported on the CLEP 20 to 80 scale, an average AP student obtained a scaled score of 58 compared to a mean scaled score of 50 for the college norming sample. The mean CLEP scaled score earned by those college students who received a final course grade of A was 60; the mean score for students receiving a college grade of B was 51, and the mean score for students who received a college grade of C was 47.

AP Calculus AB and Calculus BC

Although the content of the two examinations overlaps, Calculus BC is both more extensive and more intensive than Calculus AB since it is devoted entirely to the measurement of calculus topics found only in a very demanding first-year calculus course. The content of Calculus BC requires not only knowledge of more advanced topics such as sequences and series, and elementary differential equations, but also requires more knowledge of the rudiments of the theoretical tools of calculus. Futhermore, the content of Calculus BC is designed to qualify the student for placement and credit one semester beyond that granted for Calculus AB.

A number of validity studies involving the AP Calculus Examinations have been conducted over a period of

TABLE 6
CONTENT SPECIFICATIONS

Percentage Distribution by Content Area

	Arithmetic		Algebra		Geometry			Elementary Functions			Calculus		
	Computation	Applications	Up to Quadratics	Quadratics and Beyond	Plane	Solid	Coordinate	Trigonometric	Algebraic	Logarithmic and Exponential	Differential	Integral	Advanced Topics
PSAT/NMSQT (Mathematics Section)[a]	5	30	30		30	2	3						
ATP SAT (Mathematics Sections)[a]	5	30	30		30	2	3						
ATP Achievement Tests in Mathematics													
Level I[a,b]			16	14	20	6	12	8	8	4			
Level II[b]			4	14		8	12	20	14	10			
AP Examinations in Mathematics													
Calculus AB (Section I)								7	8	7	39	39	
Calculus BC (Section I)											33	33	34
CLEP General Examination in Mathematics													
Part A	15	33	30	5	12	2	3						
Part B			38	40			4		14	4			
CLEP Subject Examinations in													
College Algebra			20	45			10		15	10			
Trigonometry								100					
College Algebra-Trigonometry			10	22			5	50	8	5			
Calculus with Elementary Functions								7	8	7	39	39	
CGP Mathematics Tests													
Test C	50	50											
Test D	50		50										
Test E			50	50									
DTMS													
Arithmetic Skills	83	17											
Elementary Algebra Skills			100										
Intermediate Algebra Skills			75	25									
Functions and Graphs								45	25	30			

[a]The range of content covered by the geometry questions on the mathematical sections of the PSAT/NMSQT and the SAT is restricted primarily to those concepts developed prior to a formal geometry course, whereas the geometry questions on the Level I examination assume a formal geometry course.

[b]Questions in the miscellaneous category (see Table 2) have not been included; therefore, the sum is not 100 percent.

years. These studies show that the performance of AP students as a group on either Calculus AB or Calculus BC is as good as or superior to the performance of college students taking comparable college calculus courses.

CGP Computation Test and DTMS Arithmetic Skills

Although the content of the two tests is quite similar, DTMS Arithmetic Skills includes applications involving arithmetic reasoning, whereas in CGP, the arithmetic reasoning problems are included in a separate applied arithmetic test.

CGP Elementary Algebra Test and DTMS Elementary Algebra Skills

The most significant difference in the two elementary algebra tests offered in the CGP and DTMS programs other than the amount of time allotted is the type of question used. The quantitative comparison type is used in the CGP algebra tests, whereas the regular multiple-choice type is used in the DTMS algebra tests.

The results of either test may be used to determine overall readiness to begin work in any course whose prerequisite is knowledge of elementary algebra.

CGP Intermediate Algebra Test and DTMS Intermediate Algebra Skills

Differences similar to those between the CGP Elementary Algebra Test and DTMS Elementary Algebra Skills exist between the CGP Intermediate Algebra Test and DTMS Intermediate Algebra Skills.

DTMS Functions and Graphs, basically a calculus readiness test, has no counterpart in the CGP Program.

Comparative Statistical Test Data

Table 7 below provides comparative statistical data for each of the examinations. The measurement characteristics presented are score scale, mean, standard deviation, reliability, standard error of measurement, and percent completing 75 percent of the test.

TABLE 7
COMPARATIVE STATISTICAL TEST DATA

	Reported Scores					
	Score Scale	Mean	Standard Deviation	Reliability[a]	Standard Error of Measurement[a]	% Completing 75% of Test[a]
PSAT/NMSQT (Mathematics Section)	20-80	45.2	10.8	.89	3.7	99
ATP SAT (Mathematics Sections)	200-800	467	114	.91	35	99;99[b]
ATP Achievement Tests in Mathematics						
Level I	200-800	535	94	.87	32	99+
Level II	200-800	651	95	.87	33	99+
AP Examinations in Mathematics						
Calculus AB						99+
Multiple-choice	—	—	—	.88		
Free-response	—	—	—	.84-.87		
Composite	1-5	3.0	1.2	.92-.93	11.3-12.1[c]	
Calculus BC						99
Multiple-choice	—	—	—	.87		
Free-response	—	—	—	.79-.85		
Composite	1-5	3.2	1.3	.90-.92	11.5-12.8[c]	
CLEP General Examination in Mathematics[d]	200-800	482	78	.90	25	97;99[b]
CLEP Subject Examinations in						
College Algebra[e]	20-80	48.1	9.6	.90	3.0	98;98[b]
Trigonometry[e]	20-80	52.8	10.6	.92	2.9	95;99[b]
College Algebra-Trigonometry[e]	20-80	49.5	11.2	.93	3.0	97;97[b]
Calculus with Elementary Functions	20-80	50.0	10.0	.87	3.5	99
CGP Mathematics Tests						
Test C	20-80	45.9	8.0	.92	2.4	61;83[b]
Test D	20-80	49.3	7.8	.91	2.4	71;92[b]
Test E	20-80	59.0	8.2	.91	2.5	96;91[b]
DTMS[f]						
Arithmetic Skills	101-125	115.4	5.9	.87	2.1	97
Elementary Algebra Skills	201-225	209.6	6.9	.91	2.3	95
Intermediate Algebra Skills	301-325	309.8	6.3	.86	2.5	93
Functions and Graphs	401-425	408.8	5.9	.84	2.5	98

[a] The reliability, standard error of measurement, and % completing 75% of test shown in the table are for a recent edition of each examination.

[b] Two numbers indicate two separately timed sections of a test.

[c] Data are based on composite raw scores for an edition of the test with a maximum possible composite raw score of 210.

[d] Data are based on the March 1978 candidate group.

[e] Data are based on 1979 norming administrations.

[f] Data are based on 1978 norming administrations.

Glossary

Equating: A statistical procedure that puts the raw scores of newly introduced editions of a test on a continuing scale and compensates for variations in difficulty among various editions of the test

Mean: The average

Percentile Rank: The percent of scores in a distribution that are lower than a particular obtained score. The remaining scores are at the same level or higher.

Reliability: The consistency of the grade or score that candidates would receive if they were to repeat the examination (usually expressed as a correlation coefficient)

Standard Deviation: A measure of the spread (extent of variability) of a set of scores around their mean. The narrower the spread, the smaller the standard deviation

Standard Error of Measurement: An indication of the extent of the error inherent in an obtained score because of the imperfect reliability of a test. It indicates (in score units of the test) the range of discrepancy between the true score and the obtained score.

True score: The score a student would earn if a test could measure ability perfectly

Mathematics Advisory Committee 1980-81

Donald L. Kreider, Dartmouth College, Hanover, New Hampshire, *Chairman*

Lida K. Barrett, Northern Illinois University, De Kalb, Illinois

Floyd L. Downs, Hillsdale High School, San Mateo, California

Jeremy Kilpatrick, University of Georgia, Athens, Georgia

Douglas Smith, Central Michigan University, Mount Pleasant, Michigan

Ara B. Sullenberger, Tarrant County Junior College—South Campus, Fort Worth, Texas

Howard E. Taylor, West Georgia College, Carrollton, Georgia

ETS Consultants: James S. Braswell
Chancey O. Jones

Note: Requests for information about the use of a program should be directed to your College Board Regional Office. Specific questions about any of the mathematics examinations may be addressed to the ETS consultants listed above, Educational Testing Service, Princeton, New Jersey 08541.

College Board Publications Order Form

Important: Please print your name and address in the spaces provided below, as well as on the mailing label at the bottom of this page. Please use capital letters

Mail this form to: College Board Publication Orders, Box 2815, Princeton, NJ 08541.

Name

Address

Zip code must be given or publications cannot be sent.

ATTN:

Please make checks payable to the College Board.
Payment must accompany all orders not submitted on your institutional purchase order.

Please send me the following publication(s) in the quantity(ies) indicated.

200536		About the Achievement Tests	Free	
209095		CGP: What It's Like	Free	
238621		Guidelines on the Uses of College Board Test Scores and Related Data	Free	
278126		How MAPS Can Help You With Placement	Free	
278125		Look under the MAPS Umbrella for CGP	Free	
209143		Look under the MAPS Umbrella for DTLS/DTMS	Free	
278127		Look under the MAPS Umbrella for Self-Scoring Placement Tests in English and Mathematics	Free	
210627		PSAT/NMSQT Student Bulletin	Free	
200618		Taking the SAT	$3.00	$
201368		Advanced Placement Course Description in Mathematics	$4.00	$
208934		Beginning an Advanced Placement Course in Mathematics	$2.00	$
200638		CLEP General and Subject Examinations	$1.00	$
225425		DTMS Examination Set	$2.50	$
235469		Grading the Advanced Placement Examination in Mathematics	$2.00	$
430080		Guide to Use of the DTMS	$2.50	$

Prices are subject to change without notice.

TOTAL $

Please do not detach.

Mailing Label

College Board Publication Orders
Box 2815
Princeton, NJ 08541

TO: _____
NAME (Please type or print.)

_____
ADDRESS

_____

_____
Zip code